Name _____

Chem 352 - Spring 2009 - Quiz 6

1. The light reactions of photosynthesis in plants and the electron transport chain share many common features.
   a. Describe the components of each that fit the following descriptions:

	Photosynthesis	Electron Transport Chain
The initial donor of electrons		
The final acceptor of electrons		
The mobile 1-electron carrier		
The mobile 2-electron carrier		
Site of the Q-cycle		
In what form does each store energy for phosphorylation of ADP		
Cellular location of each		

   b. Write the *net balanced reaction equation* for the light reactions of photosynthesis.

   c. The a standard free energy change for this reaction is highly unfavorable (ΔG° = 438 kJ/mol). What is the source of energy that is coupled to this reaction to make it favorable?

   d. Compare and contrast *photophosporylation* with *oxidative phosphorylation*.

   e. Write the *net balanced reaction equation* for the dark reactions of photosynthesis.

2. What is the primary function of the urea cycle?

   a. Draw the structure formula for urea

   b. What are the sources for the two nitrogen atoms in urea?

   c. What three α-amino acids serve as intermediates in the urea cycle? (Hint: Not all of these are the common α-amino acids used to make proteins.)

   _____ _____ _____

3. Using structures, *write the chemical equations* for one round of β-oxidation starting with the fatty acid lauryl(12:0)-CoA:

   a. How many ATP's can be generated from the complete oxidation of the products obtained from the complete β-oxidation of lauryl-CoA, *i.e.*, taking them all the way to CO_2 and H_2O. _____
   Show your calculations:

   b. In eukaryotes, what is the cellular location for the β-oxidation of fatty acids? _____